

FORM PTO-390 (Modified)
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U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES

DESIGNATED/ELECTED OFFICE (DO/EO/US)

CONCERNING A FILING UNDER 35 U.S.C. 371

VOSS1170

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/890113

INTERNATIONAL APPLICATION NO.

PCT/EP00/09700

INTERNATIONAL FILING DATE

04 October 2000

PRIORITY DATE CLAIMED

04 October 1999

TITLE OF INVENTION

METHOD AND DEVICE FOR SEPARATING AND DISPOSING OF FAECES AND URINE IN URINE
SEPARATION TOILETS

APPLICANT(S) FOR DO/EO/US

BRAUN, Ulrich

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). (unsigned)
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☐ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail EL617043505US
23. ☒ Other items or information: Petition Under 37 CFR 1.37(b) for Revival of an Unintentionally Abandoned Application and Statement Under 37 CFR 1.137(b)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.53) 09/890113		INTERNATIONAL APPLICATION NO. PCT/EP00/09700		ATTORNEY'S DOCKET NUMBER VOSS1170	
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24. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **\$1000.00**

☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **\$860.00**

☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$710.00**

☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **\$690.00**

☐ International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **\$100.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =

Surcharge of **\$130.00** for furnishing the oath or declaration later than ☒ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	10 - 20 =	0	x \$18.00	\$0.00	
Independent claims	2 - 3 =	0	x \$80.00	\$0.00	
Multiple Dependent Claims (check if applicable) <input checked="" type="checkbox"/>				\$270.00	
TOTAL OF ABOVE CALCULATIONS =				\$1,260.00	
<input checked="" type="checkbox"/> Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				\$630.00	
SUBTOTAL =				\$630.00	
Processing fee of \$130.00 for furnishing the English translation later than <input checked="" type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				\$130.00	
TOTAL NATIONAL FEE =				\$760.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00	
TOTAL FEES ENCLOSED =				\$760.00	
				Amount to be: refunded	\$
				charged	\$

CALCULATIONS PTO USE ONLY

a. ☒ A check in the amount of **\$760.00** to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.


c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. **50-1355** A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

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REGISTRATION NUMBER

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DATE

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26 JUL 2001

**METHOD AND DEVICE FOR THE SEPARATE COLLECTION AND DRAINAGE
OF FAECES AND URINE IN URINE SEPARATING TOILETS**

DESCRIPTION

[0001] The method presented here relates to a urine separation toilet. Said toilet can be constructed without a partition wall between the urine and faecal outlets in such a way, that the whole bowl can be cleaned during flush operation and that the toilet paper in the urine outlet area, together with yellow deposits can be transported to the faecal outlet area. The toilet can nevertheless maintain a water-free disposal of urine.

[0002] State-of-the-art urine separating toilets are equipped with a partition wall between the front urine outlet and the back faecal outlet area, thus dividing the toilet bowl into two hydraulically unconnected partial-bowls, related to the two levels of the outlets.

[0003] If urine is diluted with water, urinary calculus precipitates, clogging the urine drainage pipes in the long run. Thus, the urine outlet has to be designed water-free. Consequently, state-of-the-art technology is limited to only flushing the back partial-bowl, because the front partial-bowl is not flushed.

[0004] Accordingly, the disadvantage of the state-of-art technology is that the front urine outlet area cannot be flushed, and thus the toilet paper, being disposed of in the front urine outlet mainly during women's urination, cannot be transported to the faecal outlet by means of flushing. It has to be transported manually, quite usually with the help of the toilet-brush, into the back faecal outlet area.

[0005] One other disadvantage of the state-of-art technology is that due to the water-less urine outlet, splashes of the urine dry-off upon the bowl-walls of the front urine outlet, thereby causing a yellow layer to develop in the course of time.

[0006] One other disadvantage of the state-of-art technology is that the urine outlet is open, whereat a strong ammoniac odour develops especially in case of long time non-usage, which is caused by the activity by the bacterial enzyme urease settling in the urine outlet.

[0007] A French patent application proposes to equip the urine outlet with a close-able seal, whereat the urine outlet seal is opened during seating by a pressure sensor, which is coupled to the toilet seat. But this urine outlet is not water-free because during flushing, flushing-water always remains in the front bowl, which drains through the urine outlet during the next usage. Furthermore, the partition wall is equipped with a small hole through which excess flushing-water can run-off from the front urine outlet area into the faecal outlet area. Although the dilution of urine is little, it is sufficient for urinary calculus precipitation. As a result of this knowledge, the mechanics of a close-able urine outlet, which is coupled through a pressure sensor with the toilet seat, is presently known.

[0008] The described disadvantages of the state-of-art technologies are eliminated by means of the following the method according to the invention and its exemplary and/or preferred embodiments.

[0009] Very preferably, the device comprises:

- (1) a close-able urine outlet with a connected drainage pipe and/or siphon, whereat the siphon can be equipped with an odour retaining light liquid, and/or
- (2) one or more conceivable and/or actually on the market available mechanical and/or physical and/or chemical sensors, and/or
- (3) a designed V-shaped toilet bowl in the cross-section which can collect the urine in front of the urine outlet more concentrated. The cross-section preferably shows bulging protrusions, which guide the urine effectively to the urine outlet.

[0010] The advantage of this method is the simple control of the toilet by means of the employment of sensors. In an especially preferred embodiment, the very workings of the human

excretory process are employed in the control of the water-free urine outlet. In a especially preferred embodiment, this control method comprises the following steps:

(a) A preferred embodiment comprises sensors, especially preferably pressure sensors, which cause direct and/or indirect reactions as soon as a person sits down on a toilet.

(b) In another especially preferred embodiment, the reactions caused in (a) and/or (c) produce an opening in the urine outlet.

(c) In another especially preferred embodiment, the reactions caused in (a) and/or (c) produce a closure, or a blocking of the push-button of the device for flushing the toilet bowl, or other suitable measures, to prevent a flushing process in the toilet bowl.

(d) In another especially preferred embodiment, the said sensors in (a) cause preferably direct and/or indirect reactions as soon as a person rises from the toilet.

(e) In another especially preferred embodiment, the reactions caused in (d) and/or (f) produce a closure of the urine outlet.

(f) In another especially preferred embodiment, the reactions caused in (d) and/or (e) produce an opening, or a release of the push-button of the device for flushing the toilet bowl, or other suitable measures, to reverse the reactions in (c).

[0011] The said pressure sensors in (a) are preferably simple, mechanical gearing constructions. The following explains the control by means of pressure sensors and simple mechanical gearing constructions. But these gearing constructions can be supplemented or even replaced by other kinds of constructions, such as gas- or liquid- hydraulic, electric, electronical, etc.

[0012] In a state of rest, the urine outlet is closed tight, and the flushing push-button is activatable. It's activation leads to a flushing of the toilet.

[0013] Through weight (through taking a seat), the toilet seat is pressed down a small distance, and this distance leads to a lifting (opening) of the urine outlet seal via a gearing construction.

[0014] By releasing (through rising) the toilet seat, one or more devices for generating a counter-pressure against the weight-pressure, preferably a metal compression spring, press the seat and the urine outlet seal back to the state of rest.

[0015] Moreover, the device for generating the counter-pressure should close the urine outlet tightly, and should move the gearing construction preferably only after a certain threshold weight is applied. This threshold value should of course be very preferably lower of a sitting child.

[0016] The activation of the mechanical gearing construction should at the same time lead to a decoupling of the toilet-flushing mechanism, preferably here as well via a simple mechanical gearing construction.

[0017] For these mechanical constructions, all currently known methods and devices are usable.

[0018] The activation of the toilet flush-button can preferably suspend the functioning of the urine outlet, until the flushing procedure is completed. By this means, the entrance of the flushing water into the urine outlet during sitting and pushing the flush-button is prevented. Here as well, all currently known methods and devices known to the experts are usable for these mechanical constructions.

[0019] In the past decades, the behaviour of the male urinating clientele has changed slowly at the instigation of the female device users. A certain percentage of the male users has started to tip up the toilet seat ahead of excreting urine in the erect standing position. In another especially preferred embodiment, the here presented method takes advantage of this male behaviour concession. The tipping up of the toilet seat causes an opening of the urine outlet with a simultaneous blocking of the flushing device. By means of this, it is ensured, that at least a part

of the urine of masculine standing urinals retrieved at the urine outlet. The tipping down of the toilet seat then causes the closure of the urine outlet and the release of the flushing device.

[0020] The faecal outlet can be designed for all possible embodiments, such as suction devices etc. For the operation of the flushing device, one or more push-buttons can be provided for, allocating different water amounts for the flushing procedure.

[0021] In a further especially preferred embodiment, said sensors in (2) can be utilized identifying and/or distinguishing substances which may be put into the toilet, such as urine, faeces, toilet paper etc. The reactions then caused by the sensors can regulate the water consumption of the toilet.

[0022] In a further especially preferred embodiment, the toilet bowls of said embodiments can be equipped with a dirt-, or water-rejecting surface (e.g. nano surfaces), preferably according to the "lotus-leaf principle".

[0023] The principle of the method shall now be explained by means of drawings which show the mechanics of the process. These exclusively exemplary embodiments shall only elucidate one possible variation of the method and the device according to the invention

[0024] **Figure 1** shows a cross-section A – B through the toilet in a preferred embodiment of the device according to the invention. The mechanism is preferably located in the hatched part of the figure, which opens the urine outlet and decouples the toilet flushing mechanism during seating, and re-establishes the state of rest during release. (1) shows a cross-section through the faecal siphon. (6) shows the urine outlet with siphon. Sections 1 – 4 show the cross-sections of figure 2.

[0025] **Figure 2** shows the cross-sections of a preferred embodiment of the device according to the invention.

[0026] Section 1 shows a section through the upper part of the device. Cutting edge A – B shows the cut of figure 1. (2) symbolizes the urine outlet, and (3) the faecal outlet.

[0027] Section 2 shows bulging protrusions (3) and (4) of the lateral walls of the device, serving to guide the urine into the urine outlet.

[0028] Section 3 shows even greater bulging protrusions.

[0029] Section 4 shows the protrusions shortly just in front of the urine outlet, which is located deeper. Located deeper than the urine outlet is the flow-off edge of the faecal outlet.

[0030] **Figure 3** shows a possible mechanical control in a preferred embodiment of the device according to the invention. Black circles symbolise axles, white circles symbolise joints. (E) symbolises the tipped up toilet seat covering the flush-button (D).

The weight on the toilet seat

[0031] Weighting the toilet seat (A), it presses via pressure-head (2) on sensor (3). This in turn presses bar (4) to the joint (5) down.

[0032] Therefore, the stiff bar (6) – (8), which revolves mounted on an axle (7), is pressed down at the end (6), and thus the end (8) is pressed up.

[0033] This forces bars (10) and (15), being mounted along with joints (9) and (14) to bar (8), to rise upward.

[0034] This causes a lifting of the urine outlet seal (B) inclusive of cover (C). Thereby, the urine outlet is open. At the same time, blocking-plug (11) snaps into the blocking-hole (12) of the blocking-shutter (13).

[0035] Also at the same time, blocking-shutter (16) is forced upwards via bar (15), which is mounted with joint (14) to bar (8). Thereby, the flush-button (D) is blocked twice with blocking-plug (18) and blocking-shutter (16), by means of bars (17), (19), (21) and (23).

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Release of the toilet seat

[0036] Spring (26) presses the entire mechanism back into a state of rest; the urine outlet seal (B) thus sinks down and closes the urine outlet, and the toilet flushing is released via a sinking of blocking-plug (11) and blocking-shutter (16).

Pressing the flush-button with a released toilet seat

[0037] Pressing flush-button (D) causes via bar (17) a snap of blocking-plug (18) into blocking-hole (16a) of blocking-shutter (16).

[0038] At the same time, the stiff bar (19) – (21), revolving mounted on axle (20), is now forced backwards at the joint (18).

[0039] Therefore blocking-shutter (13) moves via bar (23) forward, which is mounted via joint (22) to bar (21).

[0040] Thereby, the urine outlet is blocked twice via blocking-plug (11), which cannot snap into blocking-hole (12), and via blocking-shutter (16) (by means of (10), (8) and (15)), which is fixed through the locked blocking-plug (18).

[0041] Flush-button (D) moves backward only if the flushing procedure is finished. Thereby, an opening of the urine outlet seal is also excluded, provided that the toilet seat (A) is sat on during flushing.

Tipping up of the toilet seat

[0042] Toilet seat (A) revolves mounted on axle (1) via fixed bearing (25). Tackle (24) is fixed mounted on bearing (25) and bar (8). Tipping up the toilet seat (A) causes a turn to the right of bearing (25) around axle (1). Thereby tackle (24) draws bar (8) upwards, and the urine outlet seal lifts, and the toilet flushing is blocked. After tipping down the toilet seat (A), spring (26) forces the mechanism back to the state of rest.

Detail A

[0043] Detail A shows details of both blocking mechanisms. Blocking-plugs (11) and (18) can snap into the blocking-holes (16a) and (12). Thereby, both blocking-shutters (13) and (16) become immovable. After the snapping out of blocking-plugs (10) and (17), both blocking-shutters (13) and (16) become movable upward again along their grooves (12a), in which axles (10) and (17) stick.

CLAIMS

1. Device for a urine separating toilet that comprises the following features:
 - a) a device for opening a urine outlet, if a user sits down on a toilet and/or a toilet seat and/or tips the toilet seat backward, and
 - b) a device for closing the urine outlet, if the user rises after the opening of the urine outlet and/or tips the toilet seat downward.
2. Device for a urine separating toilet according to claim 1, whereat the device comprises a feature for blocking a flushing valve, if a user sits down on the toilet and/or tips the toilet seat backward, and this feature releases the flushing valve if the user rises and/or tips the toilet seat downward.
3. Device according to claims 1) and 2) for separate collection of urine and faeces in a urine separating toilet, whereat no partition wall is located between urine and faecal outlets.
4. Device according to claims 1) to 3), whereat no liquids can remain around and/or upon the closed urine outlet, but all liquids are drained by the force of gravity into the faecal outlet.
5. Device according to claims 1) to 4), whereat the toilet bowl shows protrusions at the inner surface to force the urine more effectively into the urine outlet.
6. Device according to claims 1) to 5), whereat the tipped up toilet seat covers the flush-button or buttons.
7. Device according to claims 1) to 6), whereat the faecal outlet is designed as a vacuum drain.
8. Device according to claims 1) to 3), whereat the inner surface of the toilet bowl is equipped with a dirt and water rejecting nano surface layer.

9. Method for operating a urine separating toilet comprising the following steps:
 - a) The opening of a urine outlet if a user sits down upon a toilet and/or a toilet seat and/or tips the toilet seat backward, and
 - b) the closing of the urine outlet if the user rises after the opening of the urine outlet and/or tips the toilet seat downward.
10. Method according to claim 9, whereat a flushing valve is blocked if a user sits down upon the toilet and/or tips the toilet seat backward, and the flushing valve is released again if the user rises and/or tips the toilet seat downward.



DECLARATION FOR PATENT APPLICATION

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship is as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled METHOD AND DEVICE FOR SEPARATING AND DISPOSING OF FAECES AND URINE IN URINE SEPARATION TOILETS, the specification of which

_____ is attached hereto.

 X was filed on July 26, 2001 (Attorney Docket No. VOSS1170)

as U.S. Application Serial No. 09/890,113

and was amended on _____

if applicable (the "Application").

I hereby authorize and request insertion of the application serial number of the Application when officially known.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

COUNTRY	APPLICATION NO.	FILING DATE	PRIORITY CLAIMED	
<u>Europe</u>	<u>PCT/EP00/9700</u>	<u>October 4, 2000</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<u>Germany</u>	<u>DE 199 47 648.9</u>	<u>October 4, 1999</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<u>Germany</u>	<u>DE 199 48 322.1</u>	<u>October 7, 1999</u>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of first inventor: Ulrich Braun

Inventor's signature: Ulrich Braun

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